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Measles - United States, 1996, and the Interruption of Indigenous Transmission

Since the resurgence of measles in the United States during 1989-1991 (when approximately 55,000 cases of measles were reported), the annual numbers of reported cases of measles have steadily declined. However, measles among international travelers and outbreaks in schools continue to occur.

Despite coverage levels with Measles Containing Vaccine (MCV) of >95% among schoolchildren, most outbreaks during 1985-1988 occurred in schools among children who had been appropriately vaccinated. [2,3] This prompted the Advisory Committee on Immunization Practices (ACIP) and the American Academy of Pediatrics to recommend that all children receive a second dose of MCV (preferably MMR) at either age 4-6 years or 11-12 years. [4] By 1995, a total of 41 states and the District of Columbia had implemented requirements for a second dose of MMR at either kindergarten or middle school entry (CDC, unpublished data, 1996). In 1996, patterns of outbreaks in schools indicated that gaps in coverage persist and that complete second-dose coverage of all cohorts of school-aged children is necessary to eliminate outbreaks of measles among these children. In addition, further implementation of college prematriculation vaccination requirements for a second dose of MCV should reduce the risk for measles transmission in colleges and universities. [5]

ACIP guidelines recommend that, during outbreaks in school settings, affected schools initiate a program of revaccination and consider revaccinating children in unaffected schools that may be at risk for transmission of measles .[4] The findings of a study of revaccination of schoolchildren during a measles outbreak in Albuquerque [6] indicated that no measles cases occurred 28 days after revaccination in schools without measles cases in school districts where cases had been reported. The decision to revaccinate children in unaffected schools is difficult and should be based on the likelihood of spread to such schools and the availability of personnel to conduct vaccination clinics. In these circumstances, CDC can provide vaccine to state health departments to prevent the spread of outbreaks. The ACIP is revising its guidelines to recommend that all school-aged children receive a second dose of MCV by the year 2001; during the interim, to limit the spread of measles transmission and to prevent future outbreaks, public health officials should consider revaccinating schoolchildren in unaffected schools in counties where measles cases have occurred.

Of the provisional measles cases reported for 1996, 69% had international sources: 133 (27%) cases were identified as international importations or were linked to international importations by routine case investigation, and 205 (42%) cases were linked to international importations by molecular epidemiology. Both surveillance and molecular epidemiologic data indicate that the sources of international importations have been predominantly European or Asian; no known cases of measles have been imported from the Americas in 1966.

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Inside This Issue

Community Based Public Health Endeavors

Almost everyone who has been around for a few years remembers the Toxic Shock Syndrome crisis of the late 1970s and early 1980s. The illness was terrifying, sudden, often fatal, and affected predominantly women of childbearing age. At first the cause was unknown. However, after some old-fashioned epidemiologic investigation and analysis, the cause was traced to superabsorbent menstrual tampons that had recently been released onto the market. These tampons had a reputation of working very well; unfortunately they posed a serious risk of infection with toxin-producing *staphylococci*. The tampons were removed from the market and the epidemic was controlled. For his role in investigating that crisis, as well as for many other achievements, Dr. Jeff Davis, Wisconsin state epidemiologist, received the first annual National Epidemiology Award from the Council of State and Territorial Epidemiologists in 1990.

The actual token given for this award is quite unique. It is a detached iron *pump handle*, about a foot long, which commemorates a landmark achievement in nineteenth-century London, England by Dr. John Snow. This local physician responded to a cholera epidemic in the city by mapping out the cases using a detailed street map. Dr. Snow found that the pattern of the cases' places of residence corresponded closely to areas supplied by a particular water pump. Without anyone's particular permission, he removed the handle of the pump, thus stopping the outbreak.

Both of the above are outstanding examples of ***community-based public health endeavors***. The term *endeavors* is used rather than *services* because, in my judgment, a focus on health care and health services -- that is, on patient/professional clinical encounters -- has entered into the picture and clouded the focus on the *public's health* almost every time the future of public health is discussed. Community-based public health endeavors are not just more one-on-one clinical encounters that have been moved to a nontraditional location, such as a school, a worksite, or even a health fair. Rather, they are activities undertaken at the community level on behalf of the whole population, whether they come into a clinic for a service or not. Four key components of community-based public health endeavors are outlined below.

◊ **Surveillance and control of diseases and injuries**

This kind of public health endeavor consists of going into the field, obtaining epidemiologic, environmental, and laboratory information about cases of disease or injury, analyzing and interpreting the findings, and taking specific action to prevent further spread of disease or occurrence of injury. These adventures are often known as "shoe-leather epidemiology", symbolized by a shoeprint with a hole in the sole. The works of Dr. Snow and Dr. Davis, described above, fall into this category.

◊ **Protection from environmental health and safety hazards**

Environmentalists (generally, registered sanitarians) perform, with distinction, six or seven key functions which are often unappreciated, even by those in the rest of public health. Environmentalists ensure safe water supplies, provide for adequate sewage disposal, inspect restaurants, motels, and swimming pools, and safeguard the milk supply. The milk safety program is a particular example where environmental health inspections at several points in the production, storage, distribution and sale chain are needed in order to assure that a naturally biologically hazardous food product is safe for use. We are fond of describing the comprehensive nature of this program by saying we protect the milk "from moo to you".

◊ **Advocacy for changed law, policy, and practice**

The federal policy requiring states to enact seat belt laws in order to receive federal highway funds is a clear example of governmental policy change which saves lives, and was advocated by public health professionals. An example of a non-governmental -- corporate -- policy change which also is saving lives was the switch by the food service industry in approximately 1989 from using animal fat to using vegetable oil, to fry french fries. Given the level of consumption of this food item in America, I regard the "oil change" as the number one public health intervention in the nation for that year. As public health professionals, we must advocate for pro-health policies at all levels of government as well as in the private and voluntary sectors. Sometimes it is difficult to determine just how much governmental dictum is appropriate to promote health. We need to avoid two extremes: that of the book of Judges in the Old Testament: "In those days Israel had no king; everyone did as he saw fit" (Judges 21:25, NIV) -- and that of the former Soviet Union where physicians could have their salary cut quite easily for failure to report a communicable disease. Ideally, we should have a system in which there are powerful incentives to practice healthy behaviors, but minimal to no routine interference with those who do right.

◊ **Promoting of healthy lifestyles**

I suggest three ways for public health professionals to go about this -- first, by answering the questions people ask. Though lice control and cancer cluster investigations rate low on the list of preventing disability and death, they are important because they cause so much public concern. A people who find their public health system ready to pick up the phone and patiently deal with the concern of the moment are much more likely to listen to pronouncements about healthy behaviors for longer life. Further, the most lasting lifestyle changes occur when people call in already wanting to change, but desiring information about how to do it. A free offer of nicotine patches for smoking cessation a few years ago triggered a flood of phone calls.

Second, we as leaders must set the example. A public health leader who uses no tobacco or alcohol, wears a seat belt every time he is in a motor vehicle, exercises regularly, and avoids misuse of prescription drugs is in a far better position to advocate for the public's health than someone whose behaviors are not up to the standard. A number of people at all levels of leadership throughout the greater public health system need to clean up their act.

Sometimes effective public health means tough confrontations with strong people. I see it as ethically indefensible to take, for instance, a grant from a tobacco company which contained an overt -- or implied -- requirement that the grantee refrain from smoking prevention activities for the funding period. The successful public health leader will need to muster the courage to clearly communicate, and defend, a pro-health stance in front of executive, legislative, and judiciary governmental officers as well as powerful individuals from the corporate world.

So what are the current obstacles to broad implementation of community-based public health endeavors? First, there is the incredible competition for public attention in today's society. Crime and sports take a large share of the news space. Media also deal extensively with a multitude of issues surrounding economic development and commerce. Further, when the media do focus on health, the tendency is to look for powerful anecdotes -- whether representative or not -- rather than on the mundane sorts of things like washing one's hands, and stopping smoking, that could save not only lives but large amounts of money.

Second, as long as there is no assured access to illness care for the 12-18% of the population which is uninsured, this need will divert the attention of health professionals from community based public health endeavors.

Finally, there is broad agreement that public health is underfunded. If lifestyle and environmental factors really have that much more impact on health than does medical care, then why does medical care capture almost the entire health care dollar? I do not believe that the problem is disbelief of the basic premise. It would be hard to find any citizen who would seriously dispute the impact of health behaviors. In my judgment, the problem lies with our difficulty in proving that the particular endeavors that we choose to fund, have a measurable impact. Some of this is because many impacts are very long term -- such as reduced deaths from heart disease. Moreover, the effects of health

Presentation "Community Based Public Health Endeavors" (continued from page 3)

promotion enterprise are mixed with economic and other factors well outside the control of public health. There are states who have very poorly functioning health departments but with better statewide health indices than Kentucky. The answer is not just more money. We must work harder at applied research which can demonstrate the effectiveness and cost-effectiveness of public health endeavors.

One thing that health departments in Kentucky are doing right, and should keep doing, is entering into agreements with other partners such as hospitals, schools, voluntary agencies, and others to accomplish specific tasks. Enlisting commitment goes beyond just having meetings and sharing what we are already doing. Clearly, effective action by health departments and their partners will depend on better productivity per hour spent -- there are few new resources.

One thing that we are not doing, but should be doing, is making a concerted effort to recruit and train a new generation of public health professionals. Because of population dynamics and because of strict hiring constraints in the last decade, most of the public health workforce is between forty and sixty years old, and we face a tidal wave of retirements and resignations in the next five to ten years. The younger generation needs not only to replace lost person-power, but to bring with it new vision that is less subject to the "hardening of the categories" from which most of us suffer to some extent.

If we are successful in public health, we will go one step beyond John Snow -- we will use all the phases of community-based public health endeavor described above, to build a healthier Kentucky. After the pump handle is removed, we must clear aside the bureaucracy, build a safe water supply, hook the pump back up, put the handle back on, and convince the people to use the water. Then we will all live happily ever after.

The above presentation was made on March 11, 1997, by Reginald Finger, M.D., M.P.H., as part of the *Governor's Conference on the Future of Public Health in Kentucky*. Dr. Finger is the State Epidemiologist and Director of the Division of Epidemiology.

Measles - (continued from page 1)

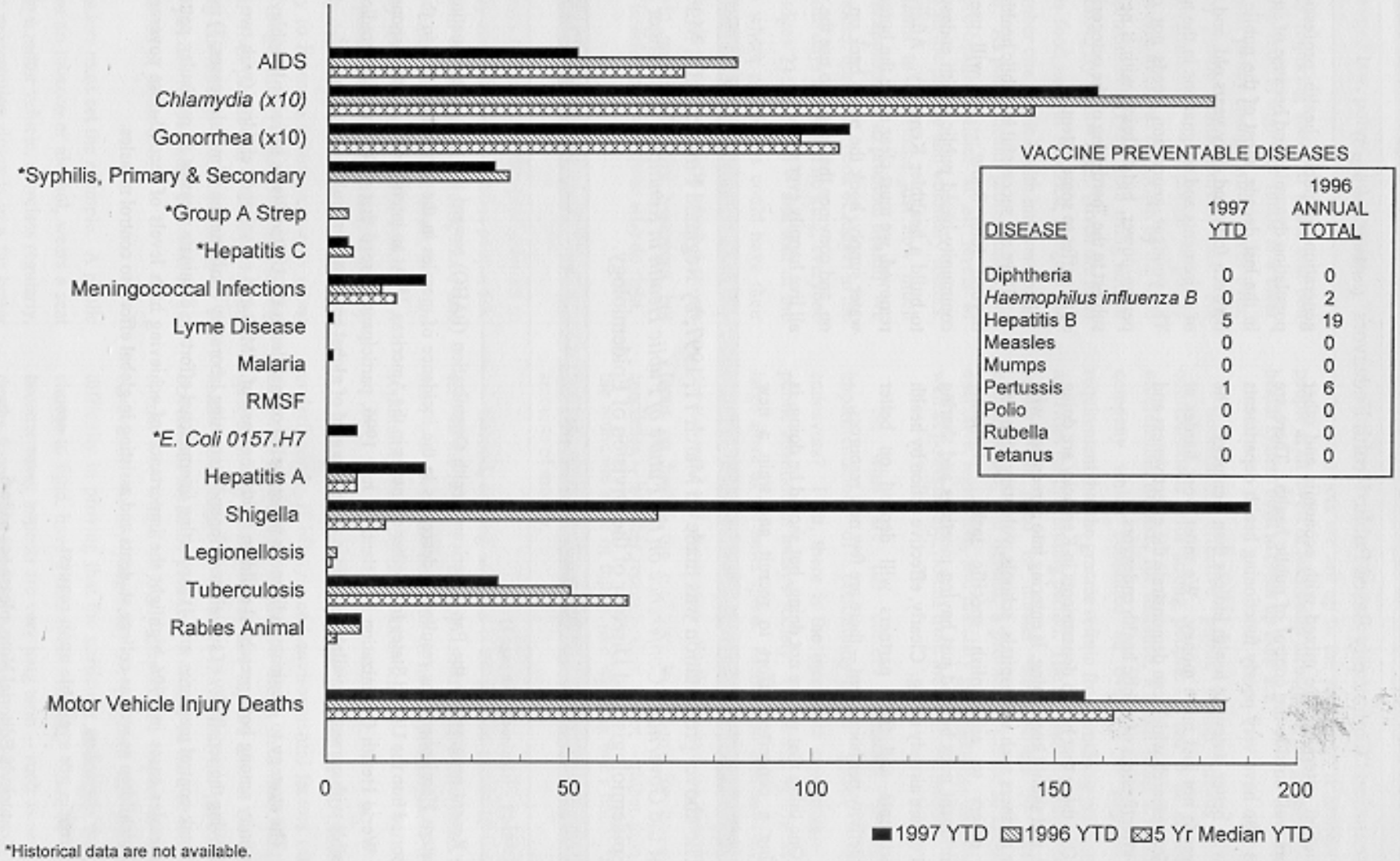
Recent progress by the Pan American Health Organization (PAHO) toward the goal of eliminating measles from the Western Hemisphere has resulted in decreases in the incidence of measles in the hemisphere and in the numbers of cases imported into the United States from other countries in the Americas.[7,8] At an international meeting sponsored by PAHO and the World Health Organization in Atlanta in July 1996, participants agreed that global measles eradication is technically feasible with currently available vaccines and that a goal of global eradication should be established.[9]

The strategy to eliminate indigenous transmission of measles in the United States includes 1) achieving high population immunity among both preschool children (with one dose of MMR) and school-aged children (with two doses of MMR), 2) improving the sensitivity of surveillance for and increasing laboratory confirmation of measles cases, 3) rapidly implementing outbreak-control measures, and 4) supporting international efforts to eliminate measles. In particular, patterns of transmission of measles cases in 1996 highlight the importance of achieving high levels of second-dose coverage in all cohorts of schoolchildren as well as college students and assisting in global efforts to control measles.

References are available upon request.

For Kentucky's Editorial Note, please see page 6.

CASES OF SELECTED REPORTABLE DISEASES IN KENTUCKY, YEAR TO DATE (YTD) THROUGH MARCH 1997



VACCINE PREVENTABLE DISEASES

DISEASE	1997 YTD	1996 ANNUAL TOTAL
Diphtheria	0	0
Haemophilus influenza B	0	2
Hepatitis B	5	19
Measles	0	0
Mumps	0	0
Pertussis	1	6
Polio	0	0
Rubella	0	0
Tetanus	0	0

*Historical data are not available.
Disease numbers reflect only those cases which meet the surveillance definition.
Contributed by: Patricia Beeler, Surveillance & Investigations Branch.

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Measles - United States, 1996, and the Interruption of Indigenous Transmission

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Kentucky Editorial Note:

Although Kentucky has not had a confirmed measles case since 1992, the national experience, including states adjacent to Kentucky, indicates that an importation of measles could occur at any time. To make its contribution towards the elimination of measles, Kentucky needs to investigate all possible measles cases promptly and appropriately. A key test is serology for IgM antibody, which may be falsely negative on the first day or two after the rash, but is quite sensitive thereafter. We also need to participate in the attempts to link cases by molecular epidemiology-which is more likely to be successful on specimens obtained early in the course of the illness. Prompt communication between physicians, health departments and the Kentucky Immunization Program will help coordinate these actions.

At least equally important is the primary prevention of measles through adequate immunization coverage. This has been strengthened by the new Kentucky regulation on immunization schedules (copies available from the Division of Epidemiology). Previously the second dose of measles vaccine had not been required until 6th grade entry; now it is also required for attendance in day care, preschool, school or other licensed child care facilities from the age of 49 months until seven years. Between 7 years and sixth grade entry, it is required only for those born October 1, 1990 or later, since suddenly requiring it in a number of grades would not have been practical to implement. We have had major success in vaccinating four- and five-year-olds on a voluntary basis last year, prior to the effective date of the regulation. We are impressed by the early adoption of second-dose measles prior to school entry by many physicians and health departments.